Data Dictionary

for

Vegetation Resources Inventory

and

National Forest Inventory

Timber Data

Resource Information Branch
Land Information Service Division
Ministry of Sustainable Resource Management

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Data Dictionary for Vegetation Resources Inventory and National Inventory Summary Files

The VRI compiler summarizes tree data at the cluster level and the cluster/species level. Compiled results are stored in the VRI database in files named SMY_C (cluster level) and SMY_CS (cluster/species level). The following table describes fields stored in these files. There are a number of fields that occur on both files, the description of the files has been combined. These files SMY_NC and SMY_NCS are identical to SMY_C and SMY_CS with 4 additional fields. These fields are also applicable to the Net Volume Adjustment Factor (NVAF) application. In some files, these fields may be missing and would indicate that no NVAF is available for the data.

Identifier information

Variable name	*Found in files*	*Variable label, and description.*
Clstr_Id	Smy_nc & smy_ncs	**Project Id - Sample # - Type Code** Concatenation of the Project identifier, Sample number and type code.
Proj_id	Smy_nc & smy_ncs	**Project identifier** The province has been divided into a number of inventory units and a project code is provided. Project identifier also included in Clstr_id above.
Samp_no	Smy_nc & smy_ncs	**Sample Number** Each ground sample cluster is assigned a number
Type_cd	Smy_nc & smy_ncs	**Type code** Is a 3 character code indicating the type of sampling, intent of sampling and measurement #. It could be an audit, NVAF, NFI/CMI sample , etc. (see VRI field sampling procedure manual for all codes)
Prj_grp	Smy_nc & smy_ncs	**Project Grouping** A grouping of projects used for regression analysis.
No_plots	Smy_nc & smy_ncs	**# of plots in the sample** This ranges from 1 to 5. There can be an Integrated plot at the centre(IPC) and up to 4 auxiliary plots.
Blowup	Smy_nc & smy_ncs	**Blowup Factor** A factor which applies to an individual tree on a per hectare basis. For variable area plots (V) - Basal Area Factor (BAF) of plot For fixed area plots (F) - 1/Plot area
Bgc_zone, Bgc_sbzn, bgc_var	Smy_nc & smy_ncs	**Bec Zone, subzone, and variant.** These are biogeoclimatic (BEC) designations as per "Ecosystems of BC " (Meidinger and Pojar,1991) They are used to compute volume using Kozak's taper equation and to check for certain adjustment factors, such as the interior wetbelt.
Fiz	Smy_nc & smy_ncs	**Forest Inventory zone:** Twelve forest inventory zones covering the province, resembling BEC zones. Previously used for Kozak's volume equation and loss factors
Samp_Typ	Smy_nc & smy_ncs	**Sample Type F/V** Indicates if the sample is fixed area or variable radius (prism or relaskope).

Species	smy_ncs	**Species** Tree species, used at the species summary level. Genus and species are collected
Sp0	Smy_ncs	**Species grouping** – Grouping of tree species, used for Kozak's volume equation as well as fitting regression models.
Util	Smy_nc & smy_ncs	**Utilization Level -** The minimum tree DBH included in calculations. The files store values compiled to 4 cm, 7.5 cm, 12.5 cm, 17.5 cm and 22.5 cm. If required, other utilization levels can be computed.

Age and height related data - Based on data collected on the "Site tree data - TS card " and site tree info from "Auxiliary Plot card - TA"

Variable name	*Found in files*	*Variable label, and description.*
Ab_m_tls	Smy_nc	**Mean Age @Breast Height for TLS trees**
Ageb_tls	smy_ncs	Breast Height Age is determined from ring counts recorded on field cards. Some calculations may be needed, depending on the age taken. An age may need to be prorated if there is a rotten core, or adjusted to breast height if the height of core sample is not taken at breast height. Trees included in this average are only Leading species (L), Second species(S) and Top Height (T).
Ab_m_txo	Smy_nc	**Mean Age @Breast Height for T,L,S,X and O trees**
Ageb_txo	smy_ncs	The calculation is as above, but the trees included in this average are tree types L, S, T, extra(X)and other(O)
At_m_tls	Smy_nc	**Mean Total Age for T,L and S trees**
Aget_tls	smy_ncs	The calculation is as above, but the age may be derived or taken directly from input data.. Breast height age is usually captured. Site index equations (MOF, Research Br, Site Tools) are used to convert from breast height age to total age. Trees included in this average are only type L, S and T.
At_m_txo	Smy_nc	**-Mean Total Age for T,L,S,X and O trees**
Aget_txo	smy_ncs	The calculation is as above, but the trees included in this average are types L, S, T, X and O.
Age_Rnd	Smy_nc	**-Age Of Random Tree** Breast Height age of Random Tree - "R" code. The age may have been derived based on sample data or be used directly from sample data. There will be only 1 randomly selected age tree per sample
Age_top	Smy_nc	**Age of Top Height Tree** Breast Height age of the top height tree - "T" code. The age may have been derived based on other sample data or be used directly from sample data. There will be only 1 top height age tree per sample. The data from 1997 and 1998 contains many 'T' trees, but the largest tree by diameter on the IPC is determined to be the Top height tree.
Bark_pct	Smy_ncs	**Bark Percent** The average % bark thickness for this species within a sample.
Bark_thk	Smy_ncs	**Bark thickness** The average bark thickness for this species within a sample.
Ht_m_tls	Smy_nc	**Height Mean All T, L and S trees**
Ht_tls	smy_ncs	Mean height of all L, S and T trees (no X and O trees), at either sample or sample / species level.

Ht_m_txo	Smy_nc	**Height Mean for T,L,S,X and O trees**
Ht_txo	smy_ncs	The calculation is as above, but the trees included in this average are types L, S, T, X and O.
Ht_Rnd	Smy_nc	**Height Random Tree** Height of "R" (Random) tree as taken from the sample data
Ht_Top	smy_nc	**Height "Top Height" Tree** Height of Top Height (T) tree as taken from the sample data. For data prior to 1999 field season cards, there were multiple T trees. This value is defined as the Height of the T tree on the IPC, of which there should be only one.
N_ag_tls	Smy_nc & Smy_ncs	**# of ages used for TLS trees** Number of ages used in the calculation of both breast height and total age for T, L, and S trees. With 1999 field season cards, an age can be designated as representative or not representative of the stand. Prior to 1999, all ages were deemed to be representative.
N_ag_txo	Smy_nc & Smy_ncs	**# of ages used for TLSXO trees.** As above, but for all site tree types – T, L, S, X, and O
N_ht_tls	Smy_nc & Smy_ncs	**# of heights used for TLS trees** Number of heights used in the calculation of mean height for species and tree types T, L, and S trees. With 1999 field season cards, a height can be designated as representative or not representative of the stand. Prior to this, all ages were deemed to be representative. Note that a tree may be representative for height and not age and vice versa.
N_ht_txo	Smy_nc & Smy_ncs	**# of heights used for TLSXO trees.** As above, but for all site tree types – T, L, S, X, and O
Si_c_tls	Smy_ncs	**Site index Calc for TLS trees.** This site index is calculated using the average breast height age (Ageb_tls) and the mean height (Ht_tls) with Site tools (as provided by Research Branch). It is possible to have a calculated site index but not a mean site index. Site index is an expression of the forest site quality of a stand, at a specified age based on site height.
Si_c_txo	Smy_ncs	**Site index Calc for TLSX and O trees.** This site index is calculated using the average breast height age (Ageb_txo) and the mean height (Ht_txo) using Site tools (as provided by Research Branch). It is possible to have a calculated site index but not a mean site index.
Si_m_tls	Smy_ncs	**Site index Mean for TLS trees.** This site index is calculated as the mean of the site indexes for trees where there is a representative height and age on the sample data. This is only for trees with types T, L and S.
Si_m_txo	Smy_ncs	**Site index Mean for TLS trees.** This site index is calculated as the mean of the site indexes for trees where there is a representative height and age on the sample data. This is only for trees with types T, L, S, X and O trees.
Sp_Rnd	Smy_nc	**Species Of Random Tree** Species of the randomly selected "R" tree as taken from sample data
Sp_Top	Smy_nc	**Species Of Top Height Tree** Species of "T" tree as taken from sample data. For the data prior to 1999 field season, this is the T tree on the IPC. Top height tree is the tree with the largest diameter in the IPC within a 5.64 radius plot, providing it is suitable. See VRI sampling procedures for definition of suitable.

Volume and basal area related data – Based on data collected on the "Tree Details – TD", Tree measurements and live standing trees from "Auxiliary Plot card - TA"

Variable name	*Found in files*	*Variable label, and description.*
Ba_Ha	Smy_nc & smy_ncs	**Basal Area Per ha (Live)** Basal Area/Ha = Sum Of (Tree Basal Area * Tree Per Hectare Factor*Plot Wt.)/no. of plots. This is for live trees. (same as BAF * no. of trees, with appropriate plot weights). Basal area is the cross-section of tree stems at DBH, including bark, measured over 1 ha
Ba_Had	Smy_nc & smy_ncs	**Basal Area Per ha (Dead)** As above, for dead trees. (Dead trees are tallied on the IPC only; no. of plots =1), except for NVAF samples (type_cd = 'Nxx'), where dead trees can be on all auxiliary plots.
Ba_Pc	smy_ncs	**% Species By B.A/Ha Live** The species basal area/ha live expressed as a percentage of the total live basal area / ha.
Dha_Mer	smy_ncs	**$/Ha (Mer) – Live**
Dht_mer	smy_nc	A $ value based on a static dollar value assigned to species and log grades values, which is then used to calculate a possible dollar value for the merchantable volume for a species in a sample. The table of values was created about 1999 and has not been updated, nor are there plans to keep it updated. Merchantable volume of a tree is that which has attained a size, quality and/or volume sufficient to make it suitable for harvesting (or Whole stem volume less volume of top and stump)
Dha_Merd	smy_ncs	**$/Ha (Mer) - Dead**
Dht_merd	smy_nc	As above for dead trees
Ht_Mean1	Smy_nc	**Height Wt. Mean All Full Measured Trees** Mean height based on a weighted[1] mean of live standing full measured trees - includes broken top trees
Ht_Mean2	Smy_nc	**Height Wt. Mean Full Top Measured Trees** Mean height based on a weighted mean of live standing full measured trees which are not broken top
Ht_Mnall	Smy_nc	**Height Wt. Mean All Full Measured Trees** Mean height based on a weighted mean of all (live and dead) standing full measured trees - includes broken top trees
Qmd	Smy_nc & smy_ncs	**Quad. Mean Diameter (Live)** Sqrt [Sum (Dbh**2 * Phf_Tree) / Sum (Phf_Tree)] for live trees The quadratic mean gives additional weight to larger trees.
Qmdd	Smy_nc & smy_ncs	**Quad. Mean Diameter (Dead)** as above for dead trees.
Spb_cpct	Smy_nc	**Species Composition by Basal area** Is a list of the top 5 species by % of basal area ranked highest to lowest
Stems_Ha	Smy_nc & smy_ncs	**Stems/Ha (Live)** Stems Per Hectare = [Sum (Phf_Tree of live trees)]/No Of Plots.

[1] Weight refers to the method used to select the tree. For fixed radius plots the probability a tree is selected from the polygon, is proportional to frequency (PPF sampling) of occurrence. For variable radius plots the probability of a tree being selected is proportional to the size (PPS sampling) of the tree.

		calculated at 5 standard utilization levels. This is often referred to as density or stand density.
Stems_Hd	Smy_nc & smy_ncs	**Stems/Ha (Dead)** as above for dead trees.

The volumes below are listed as much as possible in decreasing values.

Vha_Wsv	smy_ncs	**Whole stem volume / ha (live)**
Vht_wsv	smy_nc	Whole stem volume/ha of living trees by species. Calc. Vha_wsv = sum (vol_wsv* basal area of tree) trees in group Vht_wsv = sum of species vha_wsv. Volume of the main stem, including stump and top as well as defective and decayed wood of the tree. This is often referred to as "gross volume."
Vha_Mer	smy_ncs	**Whole stem volume less top and stump / ha (live)**
Vht_mer	smy_nc	This is whole stem volume less volume of top (set at 10 cm unless otherwise specified), and volume of stump (stump height is 30 cm). Vha_mer is species level, vht_mer is a summary by sample
Vha_Net	smy_ncs	**Whole stem Vol./Ha less Cruiser Decay (live)**
Vht_net	smy_nc	This is whole stem volume less cruiser called decay. Vha_net is species level, vht_net is a summary by sample
Vha_Netm	smy_ncs	**Whole stem Vol./Ha less Top, Stump &Cruiser Decay (live)**
Vht_netm	smy_nc	This is whole stem volume less cruiser called decay, volume of top (set at 10 cm unless otherwise specified), and volume of stump.
Vha_Nw2	smy_ncs	**Whole stem vol/ha less Top, Stump, Cruiser Decay and Waste (live)**
Vht_nw2	smy_nc	This is whole stem volume less cruiser called decay, sections of tree where the cruiser decay is > 50%, volume of top (set at 10 cm unless otherwise specified), and volume of stump. If more than 50% of the tree is waste then this volume is 0.
Vha_Nwb	smy_ncs	**Vol./Ha Live -Top, Stump, Cruiser Decay, Waste and Breakage**
Vht_nwb	smy_nc	Species level net Merch. per hectare volume. This is whole stem volume less cruiser called decay, sections of tree where the cruiser decay is > 50%, % breakage as per Biogeclimatic(BEC) based loss factor tables, volume of top (set at 10 cm unless otherwise specified), and volume of stump.
Nvl_nwb	Smy_nc & smy_ncs	**Nvl_nwb (smy_ncs) = Vha_nwb * nvaf value by strata for sample nvl_nwb (smy_nc) = sum of vha_nwb values by utilization and sample #** Whole stem volume less cruiser called decay, volume of waste, top and stump (as defined above) * Net volume adjustment factor by strata. NVAF is usually applied by strata – which could be species groupings, age, or geographic area.
Vha_Wsvd	smy_ncs	**Total Vol./Ha (Ws.Dead)**
Vht_wsvd	smy_nc	See above vha_wsv for definition
Vha_Merd	smy_ncs	**Vol./Ha Less Top And Stump (dead)**
Vht_merd	smy_nc	See above vha_mer / vht_mer for exact definition
Vha_Netd	smy_ncs	**Vol./Ha - Cruiser Decay (dead)**
Vht_netd	smy_nc	See above vha_net / vht_net for exact definition

Vha_Ntmd	smy_ncs	**Vol./Ha -Top, Stump &Cruiser Decay (dead)**
Vht_ntmd	smy_nc	See above vha_netm / vht_netm for exact definition
Vha_Nw2d	smy_ncs	**Vol./Ha -Top, Stump, Cruiser Decay and Waste (dead)**
Vht_nw2d	smy_nc	See above vha_nw2 / vht_nw2 for exact definition.
Vha_Nwbd	smy_ncs	**Vol./Ha dead -Top, Stump, Cruiser Decay, Waste and Breakage (dead)**
Vht_nwbd	smy_nc	See above vha_nwb / vht_nwbd for exact definition
Nvl_nwbd	Smy_nc & smy_ncs	**Net dead m3/ha volume** (vha_nwbd, or vht_nwbd) with Net Volume Adjustment Factor (**NVAF)dead factor applied.**
Vpc_Wsv	smy_ncs	**%Vol./Ha (Ws.Live)** For a species live whole stem volume as a % of total sample whole stem volume calc: (vha_wsv/vht_wsv)
Vpc_Mer	smy_ncs	**%Vol./Ha (Mer)** For a species Merch. volume as a % of total sample whole stem merch. volume Calc: (vha_mer/vht_mer)
Vpc_Netm	smy_ncs	**%Vol./Ha (Net.Ws)** For a species net volume as a % of total sample whole stem less volume Calc (vha_netm/vht_netm)
Vpc_Wsd	smy_ncs	**%Vol./Ha (Ws.Dead)** For a species dead whole stem volume as a % of total sample dead whole stem volume calc: (vha_wsvd/vht_wsvd)
Nvafwd_d	Smy_ncs	**Nvaf_factor dead volume** The nvaf factor which is applied to dead volume. The factor may be stratified in many ways (ie age, species etc).(Not always calculated).
Nvafwd_l	Smy_ncs	**Nvaf factor live volume** As above
Strata_info	Smy_nc & smy_ncs	**Free format text field identifying the Nvaf strata used for this particular sample -**

Volumes are as follows:

_WSV/WSVD **= Whole Stem**(Gross whole stem) i.e. the entire tree
_MER/MERD **= Merch:** whole stem less top (usually 10 cm) and stump (usually 30 cm)

- **Volumes Net of Cruiser called decay (from the field cards)**
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_NET/NETD **= Net:** whole stem volume less cruiser called decay
_NETM/NTMD **= Net Merch.** Whole stem volume less top, stump and cruiser called decay
_NW2/NW2D **= Net merch. and waste**: whole stem less top, stump, cruiser called decay and any section of the tree where the decay is >50%. If more than 50% of the tree has been removed due to waste, then the volume is 0.Waste is the unusable volume due to its proximity to decay exceeding 50% of the volume of any section or the whole tree.

_NWB/NWBD **= Net merch. waste and breakage**: whole stem volume less top, stump, cruiser called decay, waste as described above, and breakage per the loss factor tables using BEC based breakage to determine the % deducted. Breakage is volume of wood that becomes non merchantable when stems break into pieces too small to be handled economically under current logging methods.

The following prefixes indicate:

VHA = a m3/ha volume which is summarized to the sample and species level
VHT = a m3/ha volume which is summarized to the sample level
NVAF_ = a m3/ha volume to which an NVAF factor has been applied: (currently NVL_NWB, NVL_NWBD)

A suffix of **D** generally indicates **Dead** volume.